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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Fritz Gyger

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EXAMINER

KRAMER, DEVON C

ART UNIT

PAPER NUMBER

3746

MAIL DATE

DELIVERY MODE

01/12/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/518,785	Applicant(s) GYGER, FRITZ
	Examiner JESSICA L. MYERS	Art Unit 3746

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 October 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 42-49 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 42-49 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 December 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. The amendment and arguments filed on 10/8/2006 under 37 CFR 1.131 have been entered and considered.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
3. Claims 42, 43, 44, and 46 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
4. Regarding claim 42, the phrase "at least one pair" renders the claim indefinite because it is unclear how many pairs of sealing surfaces are required by the invention.
5. Claim 43 recites the limitation "the at least one pair" in line 2. There is insufficient antecedent basis for this limitation in the claim, since it is unclear which one of the pairs would require a seal or whether there is only one pair of surfaces to begin with.
6. Claim 44 recites the limitation "the sealing surfaces" in lines 2 and 3. There is insufficient antecedent basis for this limitation in the claim since it is unclear whether these sealing surfaces are of the first type or second type disclosed in claim 42.

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7. Claim 46 recites the limitation "a first contact surface in line 2" and "the first and second sealing surface" in line 5. There is insufficient antecedent basis for this limitation in the claim, since it is unclear whether these surfaces are the ones disclosed in claim 42, or whether they are additional sets of the sealing surfaces.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 42, 43, 46, and 47 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent 4,453,898 to Leka et al. (Leka et al.).

In Reference to Claim 42

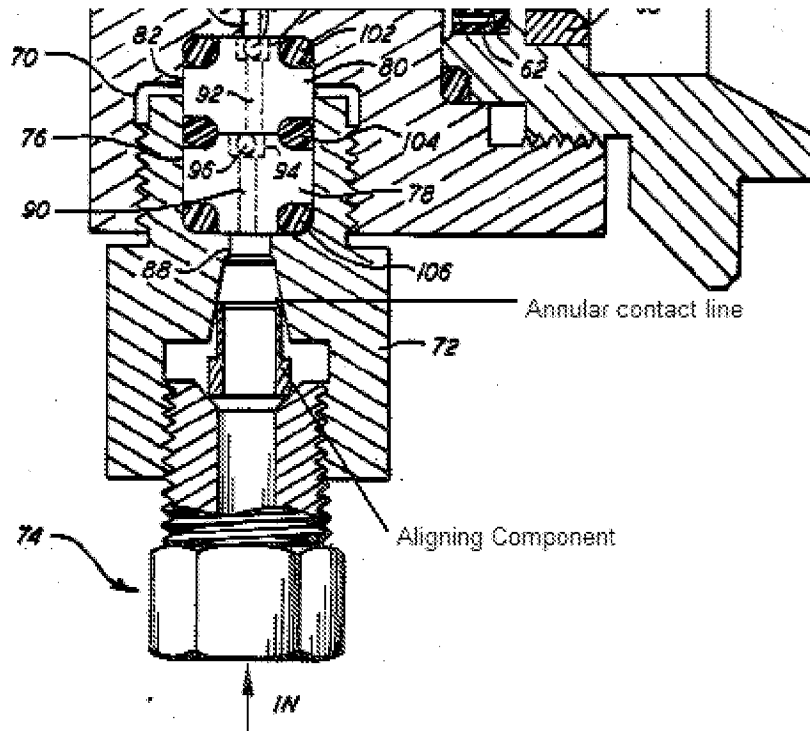
Leka et al. teach a pump for delivering precisely determined, small liquid flows under high pressure (pump assembly shown in figure 1, and check valve bores shown in figure 3), the pump comprising:

at least one pump device including a displacement chamber (piston cylinder (86)), at least one working medium access bore formed in the displacement chamber and a piston (piston end (30)) that is movable in the displacement chamber;

a detachable connecting assembly positioned at the working medium access bore (including check valve fitting (72) and conventional end connection (74)), the connecting assembly including at least one pair of sealing surfaces (there is an aligning

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component located between the fitting (72) and the connection (74) that has a sealing surface as indicated in the figure below), the first sealing surface being dome-shaped and convex (the aligning component is convex and annular in shape) and the second sealing surface being concave and conical and non-complementary to the first sealing surface (the outlet passage in the fitting (72) is conical in shape), the first and second sealing surfaces contacting each other along at least one annular contact line without forming a contact along an entire area of either one of the sealing surfaces (the aligning component and the fitting (72) contact each other along an annular line), and the sealing surfaces having respective central openings defining a channel connected to the working medium access bore (each connecting component has a bore through its center, to allow liquid to flow into the pump).



In Reference to Claim 43

Leka et al. teach the pump according to claim 42 (see the rejection of claim 42 above), wherein a seal is interposed between the first and second sealing surfaces of the at least one pair of the sealing surfaces (the contact between the first sealing surface and the second sealing surface forms a seal between the two components).

In Reference to Claim 46

Leka et al. teach the pump according to claim 42 (see the rejection of claim 42 above), wherein the connecting assembly comprises a first connecting body having a first contact surface (connector (74) with conical connecting surface), the connecting

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assembly further comprising a second connecting body having a second contact surface contacting the first contact surface (the aligning component and its lower contact rim), the second connecting body having one of the first and second sealing surfaces formed thereon (the aligning component has two dome shaped sealing rims on it) such that the second connecting body is disposed between the second contact surface and the other sealing surface formed on the second connecting body (the aligning body is formed between two separate sets of contact surfaces); the connecting assembly further comprising a duct for the working medium, the duct being fixedly connected to the second connecting body and communicating with the channel having the central opening located at the sealing surface of the second connecting body (each connecting component has a bore through its center, to allow liquid to flow into the pump).

In Reference to Claim 47

Leka et al. teach the pump according to claim 46 (see the rejection of claim 46 above), wherein the contact surfaces are cambered (each contact surface is rounded) and complementary to each other to center the contact surfaces with respect to each other (the contact surfaces are complementary in the sense that one fits inside of the other).

10. Claims 42 and 45 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent 1,586,278 to Bardenheuer (Bardenheuer).

In Reference to Claim 42

Bardenheuer teaches a pump for delivering precisely determined, small liquid flows under high pressure (see figure 1), the pump comprising:

at least one pump device including a displacement chamber (cylinder (10)), at least one working medium access bore formed in the displacement chamber and a piston (piston (11)) that is movable in the displacement chamber;

a detachable connecting assembly positioned at the working medium access bore (clearance pockets (16)), the connecting assembly including at least one pair of sealing surfaces (there is a pair of sealing surfaces between the piston (37) and the shoulders (21^a, 22^a, 23^a, etc)), the first sealing surface being dome-shaped and convex (the piston (37) is generally dome shaped and convex) and the second sealing surface being concave and conical and non-complementary to the first sealing surface (the shoulders (21^a, 22^a, 23^a, etc) approximate a conical shape), the first and second sealing surfaces contacting each other along at least one annular contact line without forming a contact along an entire area of either one of the sealing surfaces (the piston contacts each shoulder along an annular line), and the sealing surfaces having respective central openings defining a channel connected to the working medium access bore (the shoulders have a central opening that allows ports and passages (19 and 40) to lead into the piston chamber).

In Reference to Claim 45

Bardenheuer teaches the pump according to claim 42 (see the rejection of claim 42 above), wherein the connecting assembly comprises a first pair of the sealing surfaces and a third pair of the sealing surfaces (there are several pairs of sealing

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surfaces, each associated with a shoulder(21^a, 22^a, 23^a, etc)), one of the sealing surfaces of each pair being an inner sealing surface and another of the sealing surfaces of each pair being an external sealing surface (the inner sealing surfaces are those associated with the piston (37), since it is slid inside the bore formed by the shoulders), and the connecting assembly further comprising a connecting body (the bearing piece (25) serves as a connecting body between the sealing surface of the piston (37) and the sealing surfaces of the bearing piece (25)) disposed between the external sealing surfaces of the first and third pairs of the sealing surfaces (the bearing piece carries the load from the first pair of sealing surfaces (associated with cylinder shell (17)) to the third pair of surfaces associated with the bearing piece), so that the first and third pairs of the sealing surfaces each form a tight junction with the connecting body (in this way a tight junction is formed between each bearing surface).

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claim 44 is rejected under 35 U.S.C. 103(a) as being unpatentable over Leka et al.

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In Reference to Claim 44

Leka et al. teach the pump according to claim 42 (see the rejection of claim 42 above), wherein the connecting assembly comprises a first pair of the sealing surfaces (between the aligning component and the fitting (72)), a second pair of the sealing surfaces (between the aligning component and the connection (74)), and a sealing body disposed between the first and second pairs of the sealing surfaces (the aligning body serves as the sealing body, since it forms a sealed channel between the through bores in the connection and the fitting), one of the first and second sealing surfaces of each pair of the sealing surfaces being an inner sealing surface (the sealing surfaces on the aligning component are the inner sealing surfaces, since they are slid into the bores of the connector and the fitting), the respective inner sealing surfaces of the two pairs of sealing surfaces being formed on the sealing body,

Leka et al. do not teach that the inner sealing body is made from a dimensionally stable, highly pressure-resistant synthetic material. However, Leka et al. do teach that several of the components of the pump, most notably the check valve balls (96, 100) are made from a highly pressure resistant synthetic ruby. It would have been obvious to one of ordinary skill in the art at the time of invention to form the aligning components and through bores out of the same synthetic ruby in order to make the pump durable and able to withstand very high pressures.

13. Claim 48 is rejected under 35 U.S.C. 103(a) as being unpatentable over Leka et al. in view of Bardenheuer.

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Leka et al. teach the pump according to claim 46 (see the rejection of claim 46 above), but does not teach that at least one of the sealing surfaces is provided with a concentrically stepped surface in order to provide a plurality of sealing lines.

Bardenheuer teaches a compressor or pump apparatus (10) that has additional clearance pockets (16) in communication with the pumping chamber, where the pockets can be attached or detached to the pump body by cap-screws (18) and a stepped sealing arrangement (see figure 1). The stepped sealing arrangement consists of two sealing surfaces, one of which is a convex, stepped protrusion, while the other is a concave, stepped indentation. It would have been obvious to one of ordinary skill in the art at the time of invention to form the sealing surfaces of Whiteman et al. in a stepped fashion as taught by Bardenheuer in order to provide a larger sealing surface area between the sealing faces, and to better align the bores of the separate components.

7. Claim 49 is rejected under 35 U.S.C. 103(a) as being unpatentable over Leka et al. in view of U.S. Patent 4,595,495 to Yotam et al. (Yotam et al.).

Leka et al. teach a first pump device each according to the pump of claim 46 (see the rejection of claim 46 above) comprised of a displacement chamber, but do not teach a second pump device downstream of the first pump device that is operable as a storage device of pulsation of the first pump device.

Yotam et al. teach a pump device with multiple cylinder bodies (59, 69, and 75) and multiple pistons (58, 68, and 74) arranged in series (see figure 7) in such a way that the outlet of one pump is connected to the inlet of another pump. It would have been

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obvious to one of ordinary skill in the art at the time of invention to connect several of the pumps disclosed by Leka et al. in series as taught by Yotam et al. in order to discharge fluid at a higher pressure or to ensure that the fluid is discharged at a constant pressure. When multiple piston pumps are arranged in series as taught by Yotam et al., the pump stages downstream of the first pump stage would act to store pulsation from the first pump stage.

Response to Arguments

14. Applicant's arguments with respect to claims 42-49 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. U.S. Patent 5,611,681 to Everitt teaches the dome-cone connection as claim by applicant.

16. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

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shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to JESSICA L. MYERS whose telephone number is (571)270-5059. The examiner can normally be reached on Monday through Friday, 8:30am to 5:30pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Devon Kramer can be reached on 571-272-7118. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

18. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Devon C Kramer/

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Supervisory Patent Examiner, Art
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/JLM